

Amendments to the Specification

In paragraph 3 of the Office Action, the Examiner stated “Applicant should update status of case 10/403,157 cited in ¶2 of application for patent. **Please replace paragraph [0002] with the following replacement:**

The present invention is related to application serial number 10/403,157 US20040193810A1 filed 3/31/2003, entitled “Configurable Directory Allocation”, having a common assignee.

Applicant discovered several errors in reference numbering, described in detail in the Remarks section. Replacement paragraphs with markups are provided here.

Please replace paragraph [0056] with the following replacement paragraph [0056] (Please ensure that the correct paragraph is being replaced... there seemed to be some confusion between numbering of paragraphs in a 1/23/2006 telephone interview with the Examiner).

Overhead can also be reduced using a technique shown in Fig. 5. Fig. 5 shows a more detailed view of ~~snoop directory entry 50~~ snoop directory entry 4 and ~~remote memory directory entry 55~~ remote memory directory entry 5. In general, any directory entry has a control field which is typically used to store state information relevant to the particular entry. An extra field (one bit, in the example) is shown added to each entry's control field to store an entry type identifier. ~~Snoop directory entry 50~~ Snoop directory entry 4 has a ~~snoop directory control field 51~~ snoop directory control field 6 which further comprises an ~~entry type identifier 51A~~ entry type identifier 7 which, in the example, is set to “0”. ~~Remote memory directory entry 55~~ remote memory directory entry 5 has a ~~remote memory directory control field 56~~ remote memory directory control field 8 which further comprises an ~~entry type identifier 56A~~ entry type identifier 9 which, in the example, is set to “1”. Advantageously, ~~snoop directory entry 50~~ snoop directory entry 4 and ~~remote memory directory 55~~ remote memory directory entry 5 contain the same number of bits, facilitating easy replacement of one with the other. The entry type identifiers (i.e., ~~entry type identifier 51A~~ entry type identifier 7 in ~~snoop directory entry 50~~ snoop directory entry 4 and ~~entry type identifier 56A~~ entry type identifier 9 in

~~remote memory directory entry 55~~ remote memory directory entry 5) are in the same position of the control field. With the entry type identifiers distinguishing each directory entry as an instance of ~~snoop directory entry 50~~ snoop directory entry 4 or an instance of ~~remote memory directory 55~~ remote memory directory entry 5, entries need not be immediately cast out when a directory memory reallocation is performed. For example, if snoop directory 46 is logically reduced in size, with address range X to Y being reallocated to remote memory directory 47, there is no need to cast out all ~~snoop directory entries 50~~ snoop directory entries 4 in address range X to Y immediately. However, no new instances of ~~snoop directory entries 50~~ snoop directory entries 4 will be written into that address range (X to Y) during the current allocation of directory memory 42. If a ~~remote memory directory entry 55~~ remote memory directory entry 5 is to be placed at a particular address in address range X to Y, it will be placed there, with the ~~snoop directory entry 50~~ snoop directory entry 4 at the particular address in the address range X to Y being replaced. There can be no uncertainty as to whether a particular entry is an instance of ~~snoop directory entry 50~~ snoop directory entry 4 or a ~~remote memory directory 55~~ remote memory directory entry 5 because entry type identifiers 51A and 56A 7 and 8 identify each entry.

Please replace paragraph [0057] with the following replacement paragraph [0057] (Please ensure that the correct paragraph is being replaced... there seemed to be some confusion between numbering of paragraphs in a 1/23/2006 telephone interview with the Examiner).

Although, in Figs. 2 and Figs. 3A-3C directory memory is shown to be partitioned into snoop directory 46 (and 46A, 46B, 46C) and remote memory directory 47 (and 47B, 47C) the partitioning need not be by address range. If enough associativity is designed into directory memory 42 to allow sufficient granularity in allocation between snoop directory 46 and remote memory directory 47, allocation can be performed within the congruence classes in an associative memory directory. For example, if directory memory is eight-way set-associative, eight addresses can be placed in any of a congruence class of eight positions in the memory. In an embodiment, each congruence class is further allocated to a snoop directory portion

and a remote memory directory portion. As before, in an embodiment, a control field in each directory entry contains an entry type identifier (e.g., ~~snoop directory entry identifier 51A or remote memory directory identifier 56A~~ snoop directory entry identifier 7 or remote memory directory identifier 8) that is advantageously used to identify entries that are instances of ~~snoop directory entry 50~~ snoop directory entry 4 and ~~remote memory directory 55~~ remote memory directory entry 5. Use of the entry type identifiers eliminates the need to immediately cast out all instances of an entry type from space that has been reallocated to the other entry type.

Please replace paragraph [0058] with the following replacement paragraph [0058] (Please ensure that the correct paragraph is being replaced... there seemed to be some confusion between numbering of paragraphs in a 1/23/2006 telephone interview with the Examiner).

Although snoop directory entries and remote memory directory entries advantageously are the same size (i.e., have the same number of bits), in general they need not be the same size. Fig. 4 shows a ~~snoop directory entry 50~~ snoop directory entry 4 having “X” bits and a ~~remote memory directory entry 55~~ remote memory directory entry 5 having “Y” bits. Multiple instances of ~~snoop directory entries 50~~ snoop directory entries 4 are placed in snoop directory portion 46D of directory memory 42, and multiple instances of ~~remote memory directory entries 55~~ remote memory directory entries 5 are placed in remote memory directory 47D. However, if snoop directory entries are different sizes than remote memory directory entries, many complications in addressing and replacement must be dealt with by the system designer.